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AUTHOR Baker, Janice; Zigmond, Naomi
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ABSTRACT

The study examined how adding students with learning disabilities (LD) to regular education classrooms changed the behavior of nonhandicapped students and their teachers. Initial observations were of mainstream classes containing no learning-disabled students. Observations were again conducted after LD students had been mainstreamed for 8 months. Eleven LD students were observed in five classrooms containing 89 nonhandicapped students in grades 1-5. Behaviors were coded in five areas: type of materials, grouping arrangement, person monitoring the activity, student response, and teacher response. Analyses of the observation data revealed no significant changes in teachers' behaviors after the implementation of the full-time mainstreaming program. Overall, nonhandicapped students spent the same amount of time reading in reading class and doing math in math class. Nonhandicapped students continued to be actively engaged in academic instruction about 35-40% of class time. Off-task behavior did not change significantly in reading and decreased significantly in math. Student time devoted to waiting and management decreased significantly in reading; and in both reading and math classes, teachers assigned less class time to workbooks and worksheets. Includes six references. (JDD)

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MAINSTREAMING LEARNING DISABLED STUDENTS: THE IMPACT ON REGULAR EDUCATION STUDENTS AND TEACHERS

Janice Baker and Naomi Zigmond
University of Pittsburgh

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Mainstreaming Learning Disabled Students: The Impact on Regular Education Students and Teachers

Janice Baker and Naomi Zigmond

As some educators have worked to increase the integration of students with learning disabilities, others have objected to mainstreaming because of its potential impact on the regular education classroom. Questions are raised about whether regular education teachers will find themselves spending an inordinate amount of time with the mildly handicapped students who have been returned to their regular education classes. There are also concerns about whether nonhandicapped students in these classes will spend less time engaged in academic tasks.

Integration of students with learning disabilities has increased in the past decade in large part because P.L. 94-142 requires handicapped students to be educated with their nonhandicapped peers whenever appropriate. Support for integration is often based on the perception that students with learning disabilities make poor progress in pull-out programs (Epps & Tindal, 1987; Leinhardt, Bickel & Pallay, 1982). Researchers have also begun to document the academic and social progress of students with learning disabilities in the mainstream (Baker, Padeliadu & Zigmond, 1990; Zigmond & Baker, in press; Wang & Birch, 1984). But few studies have examined the impact of mainstreaming on the regular education classroom, i.e., limited information is available regarding any changes that occur in the educational opportunities and experiences of nonhandicapped students or in the behavior of regular education teachers when students with learning disabilities are returned to

mainstream classes. With this dearth of information, fears expressed by teachers administrators and parents about integration cannot be allayed. To better prepare for increased mainstreaming, school personnel need to understand the extent to which mainstream students' and teachers' behaviors change when mildly handicapped students are added to the ecology of a regular class.

The current research examined how adding students with learning disabilities to regular education classrooms changed the behavior of nonhandicapped students and their teachers. This research was undertaken as part of a comprehensive mainstreaming project in which LD students were integrated into regular education classrooms on a full-time basis. Observation data collected prior to and during the implementation of the full-time mainstreaming project permitted an analysis of changes in mainstream students' and teachers' behaviors.

METHODS

Setting

This study was conducted in an urban school district with more than 40,000 students in grades K-12. Approximately three percent of the population is identified as learning disabled. At the elementary level, learning disabled students have typically been placed in self-contained special education classrooms; they receive instruction in all academic areas from a special education teacher and join regular education classes for art, physical education, library, and music.

The site of the current study, one of 53 elementary schools in the district, served a predominantly Black population from a low socio-economic neighborhood. There were 266 students in grades K-5 in March, 1988 and 243 students in March, 1989. The school population was over 99% Black, although the elementary population in the district was approximately 54% Black. Over 90% of the students in this target school qualified for the free lunch program based on the income of their parents.

A comprehensive program for full-time mainstreaming, Project MELD (Mainstreaming Experiences for the Learning Disabled), was introduced into this elementary school during the 1987-88 school year. One feature of the MELD model involves returning LD students to mainstream classes full time, after developing a school-based procedure for making placement decisions. The other program features involve changing conditions in the mainstream that lead to referral to special education. This includes improving mainstream instruction in literacy, monitoring individual students progress, and cultivating an attitude of accommodation rather than referral by implementing a problem solving mechanism and developing a new role for special education teachers that combines direct instruction and collaborative consultation. The 1987-88 school year served as a planning year for the mainstreaming project and the 1988-89 school year was the first year of implementation of the MELD model.

The school employed 23 teachers in March, 1988, 12 of whom taught regular education homerooms. During the planning year, the faculty participated in intensive and on-going inservice training on new methods for teaching literacy skills and behavior management techniques as part of

Project MELD. Eight of the homeroom teachers remained in the school over the two year period of this study: one kindergarten teacher, one first grade teacher, two second grade teachers, one third grade teacher, one fourth grade teacher and two fifth grade teachers. Five of these teachers had LD students in their classrooms during the 1988-89 school year.

Nineteen students in the school were labeled learning disabled. Prior to implementation of the mainstreaming project, the LD students attended one of two self-contained classrooms, one at the primary level and one at the intermediate level. After a year of planning by all faculty, learning disabled students who had been educated in the self-contained classrooms were returned full-time to the mainstream.

The regular education students in this school were organized into two classes at each grade level, one through five. There was also one kindergarten class and one first grade transition class in the building. Class sizes ranged from 15 to 30 students in March, 1988, although most classes had enrollments of less than 20 students. At the primary level (first through third grades), classes were self-contained for all academic subjects. In the fourth and fifth grade classes, teachers taught reading to their homeroom, but for other content areas the classes were departmentalized. Intact groups of students changed classes and moved to other rooms for math, language arts, social studies and science classes.

Data Collection Procedure

In order to assess the impact of adding LD students to mainstream classes, data were collected during two periods, March, 1988 and March, 1989. During the 1987-88 school year, regular education teachers did not have LD

students in academic subject classes; therefore, the March, 1988 observations were of mainstream classes containing no labeled students. By March, 1989 LD students had been mainstreamed for eight months; observations conducted in these classes captured the behaviors of of 13 to 27 nonhandicapped students and one to three LD students.

Systematic behavioral (time-sample) observations were conducted during reading and math classes to determine the frequency of various students and teacher behaviors. An observation protocol developed by the authors (see Baker, Drylie-Quinn, Gaus & Zigmond, 1988) was utilized to estimate the frequency of student and teacher behaviors. Table 1 summarizes the categories of behaviors observed and coded. Each homeroom was observed four times during reading period and four times during math period each year. Observation data from five homerooms were analyzed for this report. These were homerooms into which LD students were placed in the 1988-89 school year and in which the teacher was constant across the 87-88 and 88-89 school years. Table 2 provides a breakdown of the number of students and the grade level of each of the five classrooms..

Student behaviors were coded in four areas: type of materials, grouping arrangement for the current activity, monitoring by adults, and student response. Student responses were clustered into actively engaged behaviors (i.e. reading orally, reading silently, writing), passively engaged bahaviors, management behaviors (getting materials, putting materials away, raising hand for help, waiting moving) and inappropriate behaviors. The student behaviors were measured by sampling six 10 second units during a 40 minute period for six students in each classroom on each observation occasion. The

student observation data were aggregated separately for reading and math classes to characterize how mainstream students typically spent their time. During the March, 1988 observations, six nonhandicapped students were randomly chosen for each observation. In March, 1989, three to five nonhandicapped students were observed in addition to the one to three LD students assigned to that classroom, to make a total of six students per observation. For this study, the data on the nonhandicapped students were compared from 1988 to 1989 to establish whether there were differences in the use of textbooks and workbooks and worksheets, the amount of whole class instruction, monitoring by the teacher, and engagement in the academic task.

Observations of teacher behaviors alternated with student observations. The teacher was observed twenty times during each 40 minute class period with each teacher observation lasting ten seconds. Teacher behaviors were clustered into non-academic interactions, instructional activities, and general management. Teacher's non-academic interactions were coded as social or behavior management (positive, neutral, or negative). Instructional behaviors of teachers were coded as teaching to a group, teaching or tutoring one-to-one, giving directions for academic tasks, or waiting for student responses. A final category included general management behaviors such as sharpening pencils or monitoring students in line. The teacher observation data were aggregated separately for reading and math classes and compared from 1988 to 1989 to determine if there were differences in the percentage of time spent in direct instruction, managing instruction, and reinforcing students for appropriate behavior.

RESULTS

During the first year of the project, while planning and inservice activities were taking place, a total of 720 ten-second observations in reading and 720 ten-second observations in math comprised the observation data set for nonhandicapped students in the five target homerooms. A total of 400 ten-second observations in reading and 400 ten-second observations in math comprised the data set for teachers during the 87-88 school year. In the 1988-89 school year, when the LD students were returned full-time to the mainstream, a total of 456 ten-second observations in reading and 552 ten-second observations in math comprised the observation data set for nonhandicapped students in the five target homerooms. A total of 400 ten-second observations in reading and 400 ten-second observations in math comprised the data set for teachers during the 1988-89 school year. Observation data for each time period were summarized and compared.

Table 3 provides the percent of time mainstream students spent with various materials, in grouping and monitoring patterns and on various behaviors in reading classes. During the baseline year, mainstream students spent the majority of time in reading classes using workbooks and worksheets (54%) or no materials at all (25%). Text was assigned about 13% of the time. The majority of the reading class was organized around whole class instruction (69%) with about a third of the time designated for independent work (30%). Students were monitored by the teacher for 70% of class time and left unmonitored for 26% of each 40-minute period. Students spent about a third of their time engaged in non-instructional tasks (32%), such as waiting or

getting materials, and another third (37%) of the class actively engaged in academic tasks. During the implementation year, when students with learning disabilities were returned full time to mainstream classes, nonhandicapped peers used workbooks and worksheets during 27% of observed reading classes and no materials at all for 30% of the time. Text was used in 30% of the class time. Instruction was organized in whole class activities for 74% and independent work for 24% of the time. Nonhandicapped students were monitored by the teacher 75% of the time and left unmonitored for 24% of the time. Nonhandicapped students exhibited non-instructional behaviors 22% of the time and were actively engaged in reading behaviors 35% of the class. Given the small sample size (four observations in each of the five homerooms at each of the two time periods) a Mann Whitney U test was selected to evaluate the significance of the differences between the two sets of data. Only two comparisons were significant at $p < .05$. Time spent with worksheets was significantly reduced in the implementation year ($U = 222.5$, $p = .02$). Also, there was a significant reduction in non-instructional time ($U = 218.5$, $p = .02$); otherwise there were no differences in how mainstream students spent reading time before and after LD students were returned to their classes.

Table 4 summarizes teacher behaviors in reading over the two year period. Before LD students were re-integrated, teachers spent almost half of each 40-minute reading period (43%) managing instruction and only 24% of the reading classes in direct instruction. They spent less than one percent of reading time giving positive reinforcement. In the implementation year, teachers spent 40% of the time managing instruction and 25% of reading time in direct instruction. More than four percent of the time was spent delivering

positive reinforcements. Mann Whitney U tests did not indicate any significant changes in teacher behaviors after full time mainstreaming.

In math classes, students also used workbooks and worksheets (40%) or nothing (25%) during most of the 40-minute observations during the baseline year (see Table 5). Over 60% of math classes were organized into whole class activities and 30% were spent independent work. The students were monitored by the teacher for 63% of the observations and left unmonitored for 35% of the observed math classes. Students were involved in non-instructional behaviors for 31% of the classes and actively engaged in math behaviors 38% of the classes.

One year later, when LD students had been reintegrated into math classes, workbooks and worksheets (29%) or no materials at all (35%) were used during over half of the math classses; texts were used for less than ten period of the classes observed in March, 1989 (Table 5). More instructional activities were conducted for the whole class (59%) than for independent work (40%). Nonhandicapped students were monitored by the teacher for 61% of the classes and left unmonitored during 39% of the classes. The students were actively engaged in math behaviors (e.g., computing problems, writing answers) for 45% of the classes and involved in non-instructional behaviors for 31% of the time. As in reading classes, only two comparison between pre-integration and post-integration student observation data were significant. After LD students were added to mainstream math classes, regular class peers spent significantly less time assigned to workbooks and worksheets ($U = 224.5$, $p = .02$), and significantly less time off-task ($U = 247.5$, $p = .05$).

Teacher behavior during math class did not change significantly over the two year period (Table 6). Teachers spent 40% of their time managing instruction in math classes during the baseline year and only 18% of the time in direct instruction. During the implementation year, teachers spent 41% of the observed classes managing instruction and 19% of the time in direct instruction in math.

DISCUSSION

The data reported in this paper contribute to our understanding of mainstreaming, specifically regarding changes in teachers' and nonhandicapped students' behaviors in regular education classes when LD students are reintegrated. Analyses of the observation data revealed no significant changes in teachers' behaviors after the implementation of a full-time mainstreaming program. Overall, nonhandicapped students spent the same amount of time reading in reading class and doing math in math class during the two years. The nonhandicapped students continued to be actively engaged in academic instruction about 35 - 40% of class time after the integration of mildly handicapped students into their classrooms. Off-task behavior did not change significantly in reading and *decreased* significantly in math. Student time devoted to waiting and management decreased significantly in reading during implementation of mainstreaming, and in both reading and math classes, teachers assigned less class time to workbooks and worksheets.

The mainstreaming of mildly handicapped students into regular education classrooms was one feature of a comprehensive model for educating mildly handicapped students. Project MELD strives to improve instruction for all students in a school, LD and nonhandicapped, and provides ongoing inservice training for all faculty in the school. This study supports our earlier report that teachers in this first implementation of MELD did not change their methods of teaching substantially after one year of involvement in the project (Zigmond & Baker, in press). The goal to improve the instruction for all students in the school by increasing engagement of students in academic tasks, increasing use of textbooks and decreasing use of workbooks, and increasing the proportion of teacher time for direct instruction and positive reinforcement was only partially accomplished. The data suggest that most of those behaviors were not significantly different after one year of implementation; ongoing inservice training did not result in consistent implementation of program features in one year. But the addition of LD students to the mainstream class also did not result in a *decrease* in time nonhandicapped peers are actively engaged in instruction, nor a *decrease* in time students were monitored by the teacher, nor a *decrease* in whole class activities taught by the teacher, as feared by school personnel.

Calls for the return of LD students to mainstream classes are often met with skepticism by mainstream teachers and administrators and by parents of mainstream students. The teachers, administrators, and parents raise questions about the impact of adding a handicapped child to the mainstream classroom. To date, no research had focused on this perspective. The present data demonstrate that instruction need not deteriorate as a result of increased

integration. There is no increase in off-task behavior among mainstream students; the LD students do not distract teachers and students from the learning that is taking place. These data provide the empirical evidence needed for a more rational debate of the value of integration for all parties concerned.

Table 1

Student and Teacher Behaviors Coded During Classroom Observations

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Type of Materials

A. Text
B. Workbook/worksheet
C. Manipulative
D. Chalkboard
E. Nothing
F. Paper and pencil

Grouping Arrangement

A. Whole class
B. Small group
C. Independent

Monitoring

A. Teacher
B. Aide
C. No-one

Student Response

A. Write
B. Read orally
C. Read silently
D. Talk
E. Ask question
F. Answer question
G. Math
H. Listen
I. Get materials
J. Put materials away
K. Raise hand
L. Wait
M. Get in line
N. Off task
O. Out-of-seat
P. Disruptive

Teacher Response

A. Teach to group
B. Individual tutoring
C. Directions for Academic Task
D. Wait for response
E. Social interactions
F. Positive reinforcement
G. Redirecting students
H. Negative reinforcement
I. General management

Table 2

Number of Students in Homerooms Observed During March, 1988 and March, 1989

March, 1988

Homeroom	Grade	Number of nonhandicapped students
101	1	17
201	2	26
202	2	20
401	4	19
501	5	15

March, 1989

Homeroom	Grade	Number of nonhandicapped students	Number of LD students	Total Number of students
101	1	27	1	28
201	2	13	3	16
202	2	16	2	18
401	4	17	3	20
501	5	16	2	18

Table 3

Comparison of Reading Classes: Materials, Grouping Arrangements, Monitoring, and Student Response

		Percent of Time					
		March, 1988		March, 1989			
Category	Codes	M	SD	M	SD	U	P
Materials	Text	12.65%	19.21	30.43%	33.23	100.5	NS
	Workbook/ worksheet	54.38	35.12	26.63	31.56	222.5	.02
	Nothing	25.15	21.31	29.68	30.92	151.5	NS
Grouping	Whole class	69.36	23.93	73.99	17.85	133.5	NS
	Independent	30.42	24.05	24.34	17.97	173.5	NS
Monitoring	Teacher	69.73	23.33	74.76	17.07	136.5	NS
	No one	25.74	21.81	24.46	16.34	149.5	NS
Student Response	Reading	24.42	13.81	22.28	16.46	172.5	NS
	Practice	12.50	12.26	13.11	13.17	140.8	NS
	Non-instructional	32.23	14.47	22.04	10.63	218.5	.02
	Off-task	13.01	8.23	10.62	9.91	182.0	NS

Table 4

Comparison of Reading Classes: Teacher Behavior

	Percent of Time					
	March, 1988		March, 1989			
Codes	M	SD	M	SD	U	P
Teaching to group	24.21	16.27	25.47	16.79	145.0	NS
Managing instruction	42.50	23.88	40.00	25.56	118.0	NS
Positive re-reinforcement	.92	1.90	4.69	7.63	118.0	NS

Table 5

Comparison of Math Classes: Materials, Grouping Arrangements, Monitoring, and Student Response

		Percent of Time					
		March, 1988		March, 1989			
Category	Codes	M	SD	M	SD	U	P
Materials	Text	2.72%	4.36	9.98	16.53	164.5	NS
	Workbook/ worksheet	40.10	28.58	28.90	30.22	224.5	.02
	Nothing	24.51	17.12	35.37	16.93	119.5	NS
Grouping	Whole class	60.31	24.04	58.90	18.00	189.0	NS
	Independent	39.39	24.51	39.52	17.76	173.5	NS
Monitoring	Teacher	62.72	22.75	61.48	15.25	184.0	NS
	No one	34.87	23.58	38.52	15.25	156.5	NS
Student Response	Math	38.14	16.02	45.47	17.03	133.0	NS
	Non-instructional	30.55	10.47	31.21	10.47	193.0	NS
	Off-task	12.95	8.66	7.73	6.33	247.5	.05

Table 6

Comparison of Math Classes: Teacher Behavior

	Percent of Time					
	March, 1988		March, 1989			
Codes	M	SD	M	SD	U	P
Teaching to group	17.65	16.09	19.03	14.95	144.0	NS
Managing instruction	40.15	20.70	40.55	16.85	124.5	NS
Positive re-reinforcement	.88	2.64	1.95	2.93	124.5	NS

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